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ABSTRACT

A pressing and recurrent problem in developing curriculum material on all nine campuses of the University of California is the unnecessary duplication of work done by others. In response to this difficulty, a computer based facility has been established to help faculty, students, and administrators to learn about developments on their campus or on the other campuses. The database currently contains information on about 975 projects on instructional improvement on all nine campuses. It is available in a timeshared environment, from any terminal with access to a telephone. Plans are being formulated to expand the system to all 28 state-supported campuses in California. (LAC)

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THE CALIFORNIA INSTRUCTIONAL IMPROVEMENT DATABASE

by

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THE CALIFORNIA INSTRUCTIONAL IMPROVEMENT DATABASE

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Sept 28, 1976

The University of California is a nine-campus institution. Eight of the campuses have both undergraduate and graduate programs, and one concentrates on medical science and related areas. The University has increasingly funded projects for improving instruction, primarily at the undergraduate level. In addition to funds earmarked for this purpose by the Regents of the University, the Legislature of California has granted funds for instructional improvement for each of the past several years. Approximately two million dollars for instructional improvement projects are available during the present academic year. In addition, the University, with its diverse and productive campuses, has federally funded external grants for curriculum development in many different areas.

A pressing and recurrent problem in developing curriculum material is the unnecessary duplication of work done by others. It was primarily in response to this difficulty that a computer-based facility was established to help faculty, students, and administrators to learn about developments of interest on their campus or on other campuses within the University of California system. The database was started by a committee of the President of the University, the President's Advisory Committee on Instructional Improvement Programs, during the 1975-76 academic year.

As of this writing, the instructional improvement database contains information about 975 projects on instructional improvement on all nine campuses.

It is available in a timeshared environment, from any terminal with access to a telephone. Since the University has a tie line phone system between its different campuses, it is easy to access the database from any campus in the system.

Recently the California State University and College system, another system of higher education in the state, has also expressed interest in the database. Plans are presently being formulated to add its projects so that a single database will access both systems, serving the total of 28 state-supported campuses in California.

Use of the Database-- A Sample

Information on instructional improvement is readily accessed even if the user has no previous experience with computers. To get a reasonable view from the user's perspective, let us follow an imaginary session.

The typical user within the University of California logs on through an account advertised on all nine campuses. The California State University and College system is expected to have separate accounts, working in the same manner. These accounts are set up in such a way that the user has access to no other material on the computer, and the accounts can therefore be widely advertised without fear of excessive uses of the computer resources.

To access the Program, the user types as follows:

BROWSE LEARN.USB12001

BROWSE is the basic software. The database itself is called LEARN and is in a computer account called USB12001. In response, BROWSE identifies itself and retrieves the necessary database. Access to information in this database is through a set of keys which point to particular items. The two principle verbs used to access are LIST and RETRIEVE. Here is a sample of each.

- (1) the command LIST PHYSICS produces the following output:

```
PHYSICS 12 REFS
#3 #4 #19 #25 #34 #59 #64 #78 #101 #103 #112 #114
```

- (2) the command RETRIEVE PHYSICS produces the full printout of the items cited above, for example:

```
#101 ENTERED JULY 16, '76
INDIVIDUAL INSTRUCTION: LARGE PHYSICS COURSE

Development of instructional methods for teaching the
use of conceptual tools. To be incorporated in written
instructional materials for an individualized self-paced
physics course. Funds provide for a full-time research
position and printing-reproduction costs.
BUDGET REQUESTED: $6,248 BUDGET AWARDED: $6,248
TYPE OF EVALUATION: FORMATIVE LEARNING MEASURES
IN FILES: FINAL REPORT
DISSEMINATION: DIRECTOR, REPORT AND PRELIMINARY INST
MATERIALS, RECHARGE

F. REIF
@BERKELEY REIF PROFESSOR PHYSICS PHYSICS* LOWER-DIVISION
@MULTIMEDIA AUTOTUTORIAL PRINT VISUAL 1974
@STIPENDS UC-INNOVATIVE UC FUNDS-006248 COURSE REVISION
(For an update, type __)
```

Thus, the LIST command numerically identifies the items in the database identified by a particular key, while RETRIEVE displays the full items. If several items are to be displayed, RETRIEVE pauses between each and waits for the user to indicate further interest by pressing the return button.

The above example is typical of items in the database. First, there is a header which identifies the item number and a date of initial entry into the database. A title is followed by a brief descriptive paragraph which is usually abstracted from the proposal. The faculty member who initiated the development is identified along with the funding source and amount. All lines beginning with at signs (@) are keys, pointers into the database locating information the user is seeking. The keys indicate the amount and source of funding, campus, rank, pedagogical methods, media, evaluation procedures, director's area of specialization, and the academic area of the project.

For retrieval purposes the keys can be combined by putting a plus sign between them. Thus, to retrieve only the physics projects from the Berkeley campus, one could type:

RETRIEVE PHYSICS+BERKELEY

For building such compound commands the user can retrieve a keyword list simply by typing the word KEYS at the terminal. Since the present keyword list contains over 1500 items, such a listing may prove cumbersome in its full form. However, if one desired for example to determine whether PHYSICS is an allowable keyword, the output can be cut to a list beginning with P by typing KEYS P (or PH, or PHY, etc.). In addition to these capabilities, the user can also request a full index showing numerically which items are referenced by each key.

The emphasis in our dissemination strategy has been on the terminal, with the user interacting directly with the database to determine projects of specific interest. Individual faculty members might use it in this way, to rapidly isolate relevant materials. In addition, it is also possible to direct large output to the line printer.

The database as can be seen from the example, does not contain extensive information on a project. A file folder on each project is maintained in the database office at Santa Barbara to supplement this material. Thus, a faculty member who finds projects of interest can either contact the project director, or can consult the database staff at UC Santa Barbara for more extensive printed information. The 'dissemination' line in the printout can also be used to locate and order the products of these instructional improvement efforts (such as videotapes, slides, lab-manuals, texts, etc.).

Modes of Usage

The principle users of the database are faculty and administrators who are

planning to develop instructional improvement projects. In the past year within the University all applicants for funds for such projects have the responsibility to determine if they are duplicating existing studies. The database is the primary source of this information, and on some campuses its examination is required before funds are granted. University Hall and members of appropriate systemwide committees have also been offered access to this information.

A brief quarterly analysis of the changing content of the database is being published by the staff, including graphs of keyword frequency. The July 1976 edition included the following statistics.

FUNDS: LEVEL OF FUNDING

\$1-5,000	=====	
	=====	566
\$5,000-10,000	=====	179
\$10,000-15,000	=====	70
\$15,000-20,000	=====	28
\$20,000-25,000	=====	15
\$25,000-30,000	=====	12
\$30,000-35,000	=====	2
\$35,000-40,000	=====	3
\$40,000-45,000	=====	5
\$45,000+	=====	3

ACADEMIC LEVEL OF PROJECT

Lower-upper div	=====	294
Lower-division	=====	201
Upper-division	=====	185
All-levels	=====	120
Remedial/refresher	=====	46
Graduate-level	=====	46
Professional	=====	25
TA-level	=====	23

TEACHING METHOD

Autotutorial	=====	179
Interdisciplinary	=====	96
Experiential-learning	=====	94
Course-laboratory	=====	84
Seminars	=====	68
Dept-laboratory	=====	59
Demonstrations	=====	57
Study-aids	=====	49
Computer + autotutorial	=====	48
Problem-solving	=====	45
Workshop	=====	43
Tutorial	=====	38
Autotutorial + TV-taped	=====	36
Speakers	=====	36
Survey	=====	35
Computer + problem-solving	=====	34
PSI	=====	29
Off-campus-inst	=====	28
Computer + testing	=====	9
Computer + data- processing	=====	7
Computer + demonstrations	=====	5

OTHER

Faculty-evaluation	=====	61
Instructor-self-eval	=====	37
Academic-advising	=====	33
Dissemination	=====	31
TA-training	=====	29
Testing	=====	20
Student-handbook	=====	18
Teaching-consultant	=====	14

Once the State University and College system has been fully integrated into the database, comparative statistics will be released through this publication.

On several occasions, disciplinary-based printouts have been sent to department chairpersons on all University campuses. For example, the chemistry department chairpersons recieved a list of all projects relating to chemistry.

It is hoped that this furnished leads to new ideas and suggested directions for additional development. We have also sent to project directors a printout of their own abstracts, to allow corrections and updates. Changes authorized by the directors were promptly edited into the database. When a project is funded for a second year, a link line is added at the bottom of the initial listing which instructs the user to type a specific number for an update of information. A 'follow-up' line is now used to document institutional or extramural funding for a given project. And to supplement this basic information, creative extramurally-funded and non-funded campus projects will be added in the near future.

Informal use of this data is also encouraged. Thus a faculty member planning a new development in a course, such as PSI techniques, might be interested in related projects and in talking with appropriate directors to see what difficulties were encountered. Perhaps such a user is not seeking funds at all, but may simply be attempting to develop a course in the normal unsupported fashion. Or it may be that this user is seeking to form a group from two or more campuses to consult on a common problem. Again the database furnishes a rich source of information to locate individuals working in a related area. In more complicated cases, sophisticated searchers rely on a systematic keyword taxonomy, available in print, which describes keywords used, how they are defined, and how they are grouped.

Software

The BROWSE system is available on the Sigma 7 at UC Irvine. It was not initially designed for the application described above. It has, in fact, been used for a number of class applications, primarily bibliographic, in addition to its use in this database. The system was written by Richard Sauvain of Xerox

Rochester and was based on the Autonote system developed at the University of Michigan.

We are currently in the process of making some minor changes to achieve more flexibility from our point of view, particularly with regard to keeping records of usage. The BROWSE system seems ideally suited for the purpose at hand. It does not involve any elaborate knowledge on the part of the user, and it runs easily in an interactive fashion. It was initially designed for informal databases which have no need for the full structure of a typical DMS database, and in which a simple key pointing structure would be sufficient. It has proven entirely adequate for our needs and is particularly attractive in that local software development was unnecessary to prepare the database.

Entry of Materials

The BROWSE system has internal facilities for entering materials. Most of the research and preparation of materials has been conducted by the staff at UC Santa Barbara, the database headquarters. Over the last two years personnel has been trained to continually enter and edit this material. BROWSE does not yet contain internal editing capabilities, and so it has been necessary to use the system editor for correcting some of the errors. Editing capabilities are currently being incorporated into BROWSE.

Evaluation

During the 1976-77 academic year a two phase evaluation study concerning the use of the database by University faculty will be conducted. Charles Bourne, the Director of the Institute for Library Research at UC Berkeley, will coordinate the initial evaluation of the technical and procedural policies. The results of this and the more extensive impact assesment of the following summer will be available when they are completed.

Future of the Database

As indicated, the database was first developed for use within the University of California but is being expanded to include the California State University and Colleges system. In addition to this 28 campus faculty audience, a number of other users are being invited to access the information. Graduate and undergraduate students have been formally invited to participate in this program, through student organizations on campuses. The California Post Secondary Education Commission, charged with the responsibility for overseeing the various components of higher education for the state, has utilized the system. The potential for cooperative dissemination with other state agencies, private educational institutions, and university systems of other states is yet to be explored.